01-4006; Patrick Peterson et al.
APPARATUS AND METHOD FOR LOGGING EVENTS
THAT OCCUR WHEN INTERACTING WITH AN
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FIG. 1

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START

1002 — DEVELOP CODING SHEET

1000 — DETERMINE RECORDING METHOD

1003 — MODEL CALL FLOW AS FINITE STATE AUTOMATON

1004 — RECORD CALLS

SPLIT CALL RECORDINGS

1005 — ANNOTATE CALLS (AGENT-CALLER DIALOGS)

1007 — RUN DTMF DETECTION

1006 — OBTAIN PROMPT SAMPLES

1008 — CONFIGURE PROMPT DETECTION

1009 — RUN CALL SPLITTING

DTMF SEQUENCE

1010 — RUN PROMPT DETECTION

1011 — CONFIGURE PROMPT INFERENCE

PROMPT OCCURENCES

1012 — RUN PROMPT INFERENCE

IVR EVENT SEQUENCES

1013 — RUN COMPILATION OF IVR EVENT SEQUENCES

AGENT-CALLER DIALOG EVENT SEQUENCES

1014 — CONFIGURE CALL SEGMENT TIMING ANALYSIS

1015 — CONFIGURE ROUTING ANALYSIS

1016 — CONFIGURE AUTOMATION ANALYSIS SPREADSHEETS

1017 — CONFIGURE STATE CLUSTERING

1018 — COMPILE LIFE-OF-CALL DIAGRAM

1019 — RUN ROUTING ANALYSIS SCRIPTS

1020 — CREATE AUTOMATION ANALYSIS REPORT

1021 — COMPILE RAW USER-PATH DIAGRAM

1022 — CLEANUP LIFE-OF-CALL DIAGRAM

1023 — CLEANUP ROUTING ANALYSIS

1024 — IDENTIFY PROBLEMS & INFER RECOMMENDATIONS

1025 — CLEANUP USER-PATH DIAGRAM

FIG. 1A

01-4006; Patrick Peterson et al.
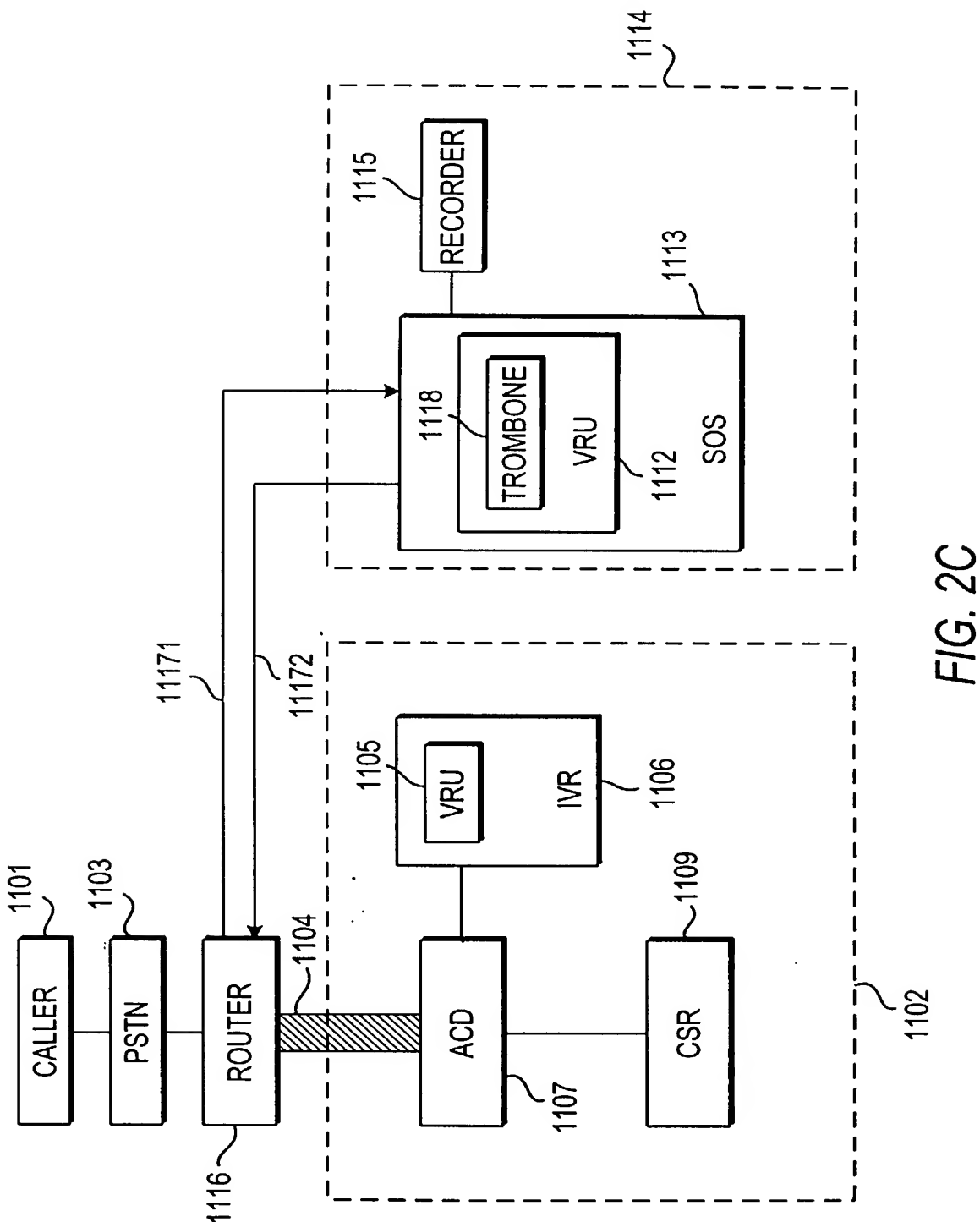APPARATUS AND METHOD FOR LOGGING EVENTS
THAT OCCUR WHEN INTERACTING WITH AN
AUTOMATED CALL CENTER SYSTEM
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FIG. 2A

01-4006; Patrick Peterson et al.
APPARATUS AND METHOD FOR LOGGING EVENTS
THAT OCCUR WHEN INTERACTING WITH AN
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FIG. 2B

01-4006; Patrick Peterson et al.
APPARATUS AND METHOD FOR LOGGING EVENTS
THAT OCCUR WHEN INTERACTING WITH AN
AUTOMATED CALL CENTER SYSTEM
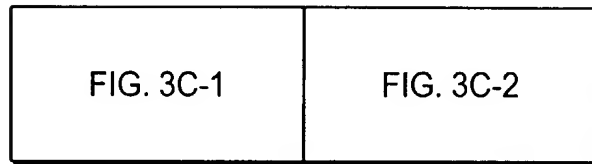Express Mail No. EL029404315US

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FIG. 2C

01-4006; Patrick Peterson et al.
APPARATUS AND METHOD FOR LOGGING EVENTS
THAT OCCUR WHEN INTERACTING WITH AN
AUTOMATED CALL CENTER SYSTEM
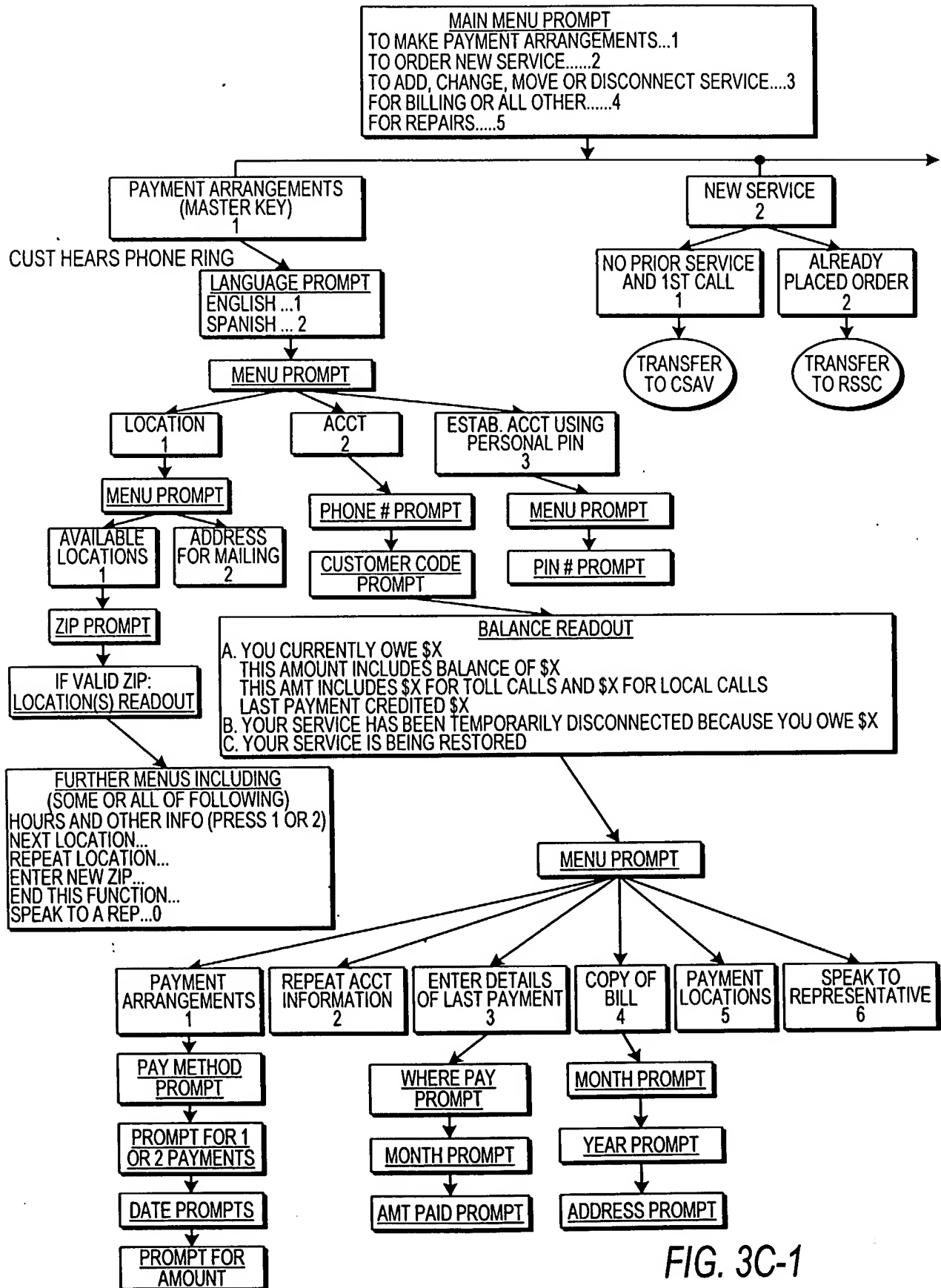Express Mail No. EL029404315US

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FIG. 3A

01-4006; Patrick Peterson et al.
APPARATUS AND METHOD FOR LOGGING EVENTS
THAT OCCUR WHEN INTERACTING WITH AN
AUTOMATED CALL CENTER SYSTEM
Express Mail No. EL029404315US

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FIG. 3C-1	FIG. 3C-2

FIG. 3B

01-4006; Patrick Peterson et al.
APPARATUS AND METHOD FOR LOGGING EVENTS
THAT OCCUR WHEN INTERACTING WITH AN
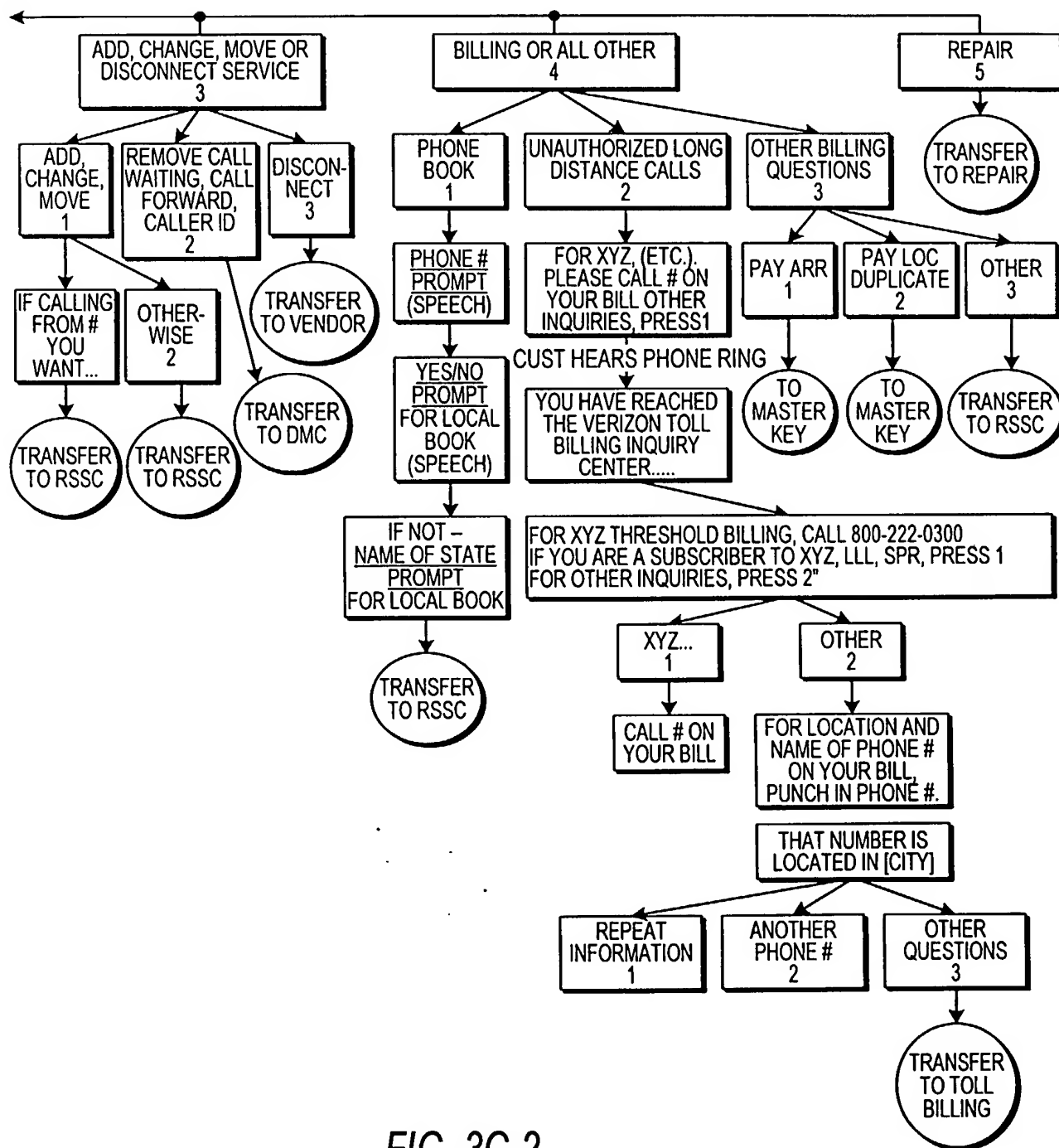AUTOMATED CALL CENTER SYSTEM
Express Mail No. EL029404315US

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MAIN MENU PROMPT
TO MAKE PAYMENT ARRANGEMENTS...1
TO ORDER NEW SERVICE......2
TO ADD, CHANGE, MOVE OR DISCONNECT SERVICE....3
FOR BILLING OR ALL OTHER......4
FOR REPAIRS.....5

PAYMENT ARRANGEMENTS
(MASTER KEY)
1

CUST HEARS PHONE RING

LANGUAGE PROMPT
ENGLISH ...1
SPANISH ... 2

MENU PROMPT

LOCATION
1

ACCT
2

ESTAB. ACCT USING
PERSONAL PIN
3

MENU PROMPT

AVAILABLE
LOCATIONS
1

ADDRESS
FOR MAILING
2

PHONE # PROMPT

MENU PROMPT

ZIP PROMPT

**CUSTOMER CODE
PROMPT**

PIN # PROMPT

IF VALID ZIP:
LOCATION(S) READOUT

BALANCE READOUT
A. YOU CURRENTLY OWE $X
   THIS AMOUNT INCLUDES BALANCE OF $X
   THIS AMT INCLUDES $X FOR TOLL CALLS AND $X FOR LOCAL CALLS
   LAST PAYMENT CREDITED $X
B. YOUR SERVICE HAS BEEN TEMPORARILY DISCONNECTED BECAUSE YOU OWE $X
C. YOUR SERVICE IS BEING RESTORED

FURTHER MENUS INCLUDING
(SOME OR ALL OF FOLLOWING)
HOURS AND OTHER INFO (PRESS 1 OR 2)
NEXT LOCATION...
REPEAT LOCATION...
ENTER NEW ZIP...
END THIS FUNCTION...
SPEAK TO A REP...0

MENU PROMPT

PAYMENT
ARRANGEMENTS
1

REPEAT ACCT
INFORMATION
2

ENTER DETAILS
OF LAST PAYMENT
3

COPY OF
BILL
4

PAYMENT
LOCATIONS
5

SPEAK TO
REPRESENTATIVE
6

**PAY METHOD
PROMPT**

**WHERE PAY
PROMPT**

MONTH PROMPT

**PROMPT FOR 1
OR 2 PAYMENTS**

MONTH PROMPT

YEAR PROMPT

DATE PROMPTS

AMT PAID PROMPT

ADDRESS PROMPT

**PROMPT FOR
AMOUNT**

NEW SERVICE
2

NO PRIOR SERVICE
AND 1ST CALL
1

ALREADY
PLACED ORDER
2

TRANSFER
TO CSAV

TRANSFER
TO RSSC

FIG. 3C-1

01-4006; Patrick Peterson et al.
APPARATUS AND METHOD FOR LOGGING EVENTS
THAT OCCUR WHEN INTERACTING WITH AN
AUTOMATED CALL CENTER SYSTEM
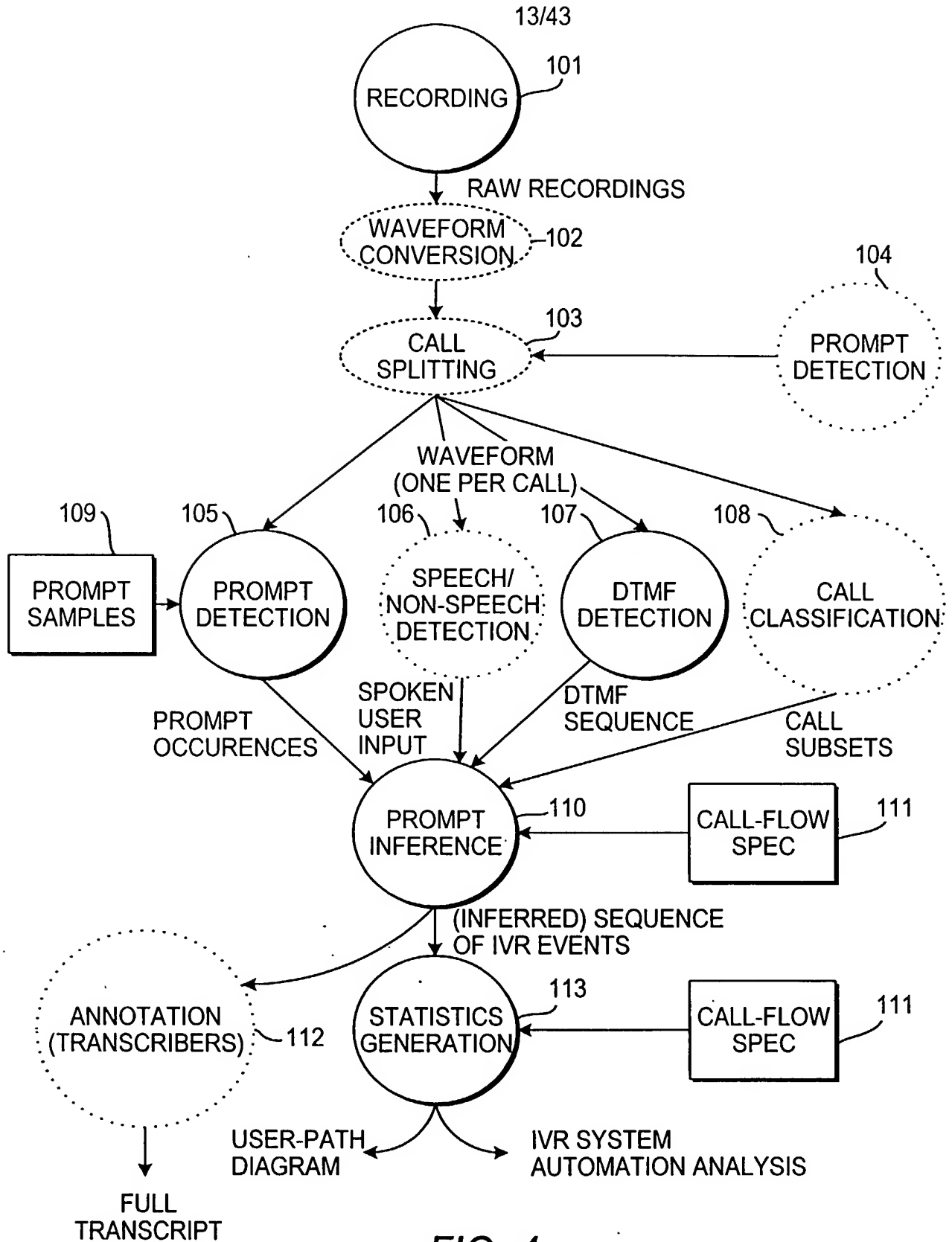Express Mail No. EL029404315US
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FIG. 3C-2

01-4006; Patrick Peterson et al.
APPARATUS AND METHOD FOR LOGGING EVENTS
THAT OCCUR WHEN INTERACTING WITH AN
AUTOMATED CALL CENTER SYSTEM
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FIG. 3D

01-4006; Patrick Peterson et al.
APPARATUS AND METHOD FOR LOGGING EVENTS
THAT OCCUR WHEN INTERACTING WITH AN
AUTOMATED CALL CENTER SYSTEM
Express Mail No. EL029404315US

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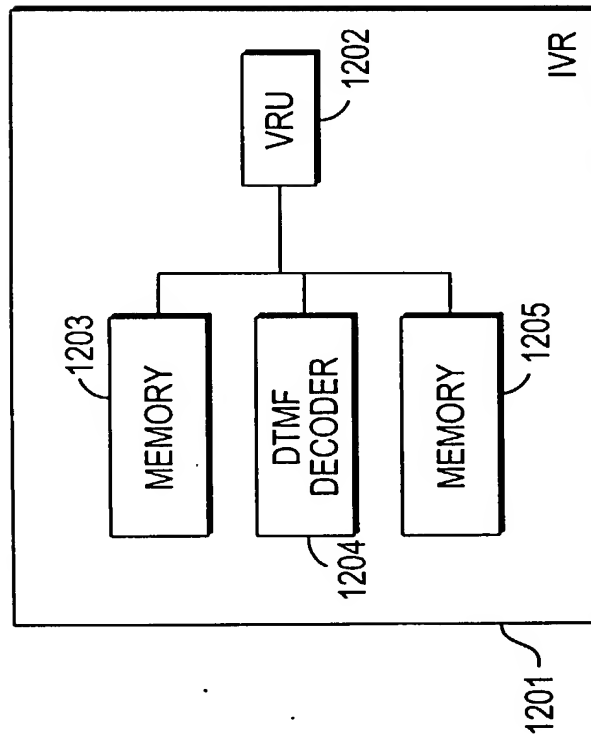
STATE	TIME	OUTCOME
CALL ARRIVAL	##.##.##	DATE; CALLER IDENTIFICATION
INITIAL MENU	##.##.##	TOUCH TONE SELECTION, E.G., 3
TELEPHONE NUMBER PROMPT	##.##.##	TOUCH TONE NUMBERS PRESSED, E.G., 617-555-1212
VALIDATE TELEPHONE NUMBER	##.##.##	INVALID NUMBER
TELEPHONE NUMBER RE-PROMPT	##.##.##	TOUCH TONE NUMBERS PRESSED
VALIDATE TELEPHONE NUMBER	##.##.##	VALID NUMBER
MENU 1	##.##.##	TOUCH TONE SELECTION
QUERY A	##.##.##	TOUCH TONE NUMBERS PRESSED
QUERY B	##.##.##	TOUCH TONE NUMBERS PRESSED
MENU 2	##.##.##	TOUCH TONE SELECTION
TRANSFER TO AGENT	##.##.##	TRANSFER QUEUE (CALLER ON HOLD)
IVR END	##.##.##	TRANSFER COMPLETED

FIG. 3E

01-4006; Patrick Peterson et al.
APPARATUS AND METHOD FOR LOGGING EVENTS
THAT OCCUR WHEN INTERACTING WITH AN
AUTOMATED CALL CENTER SYSTEM
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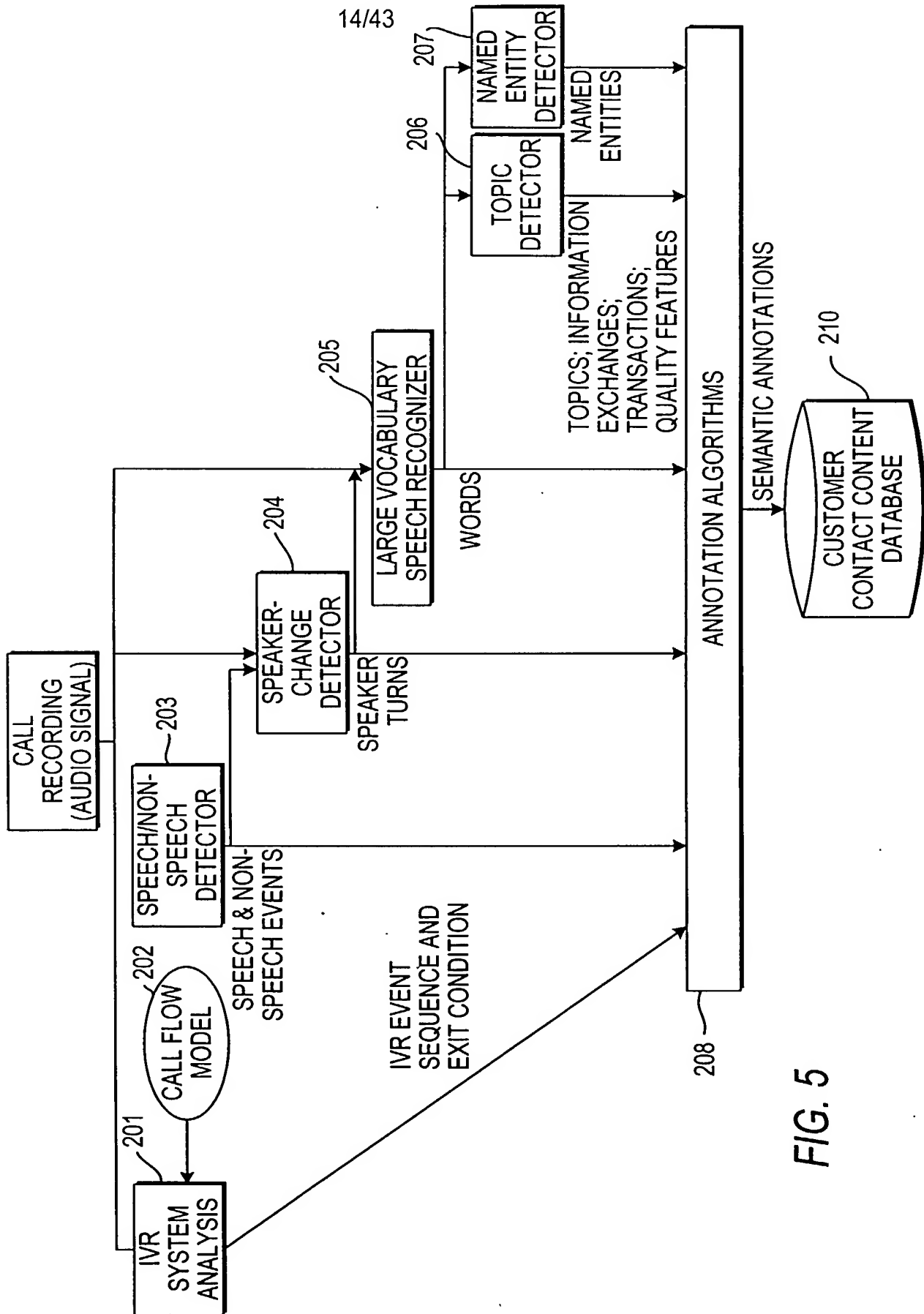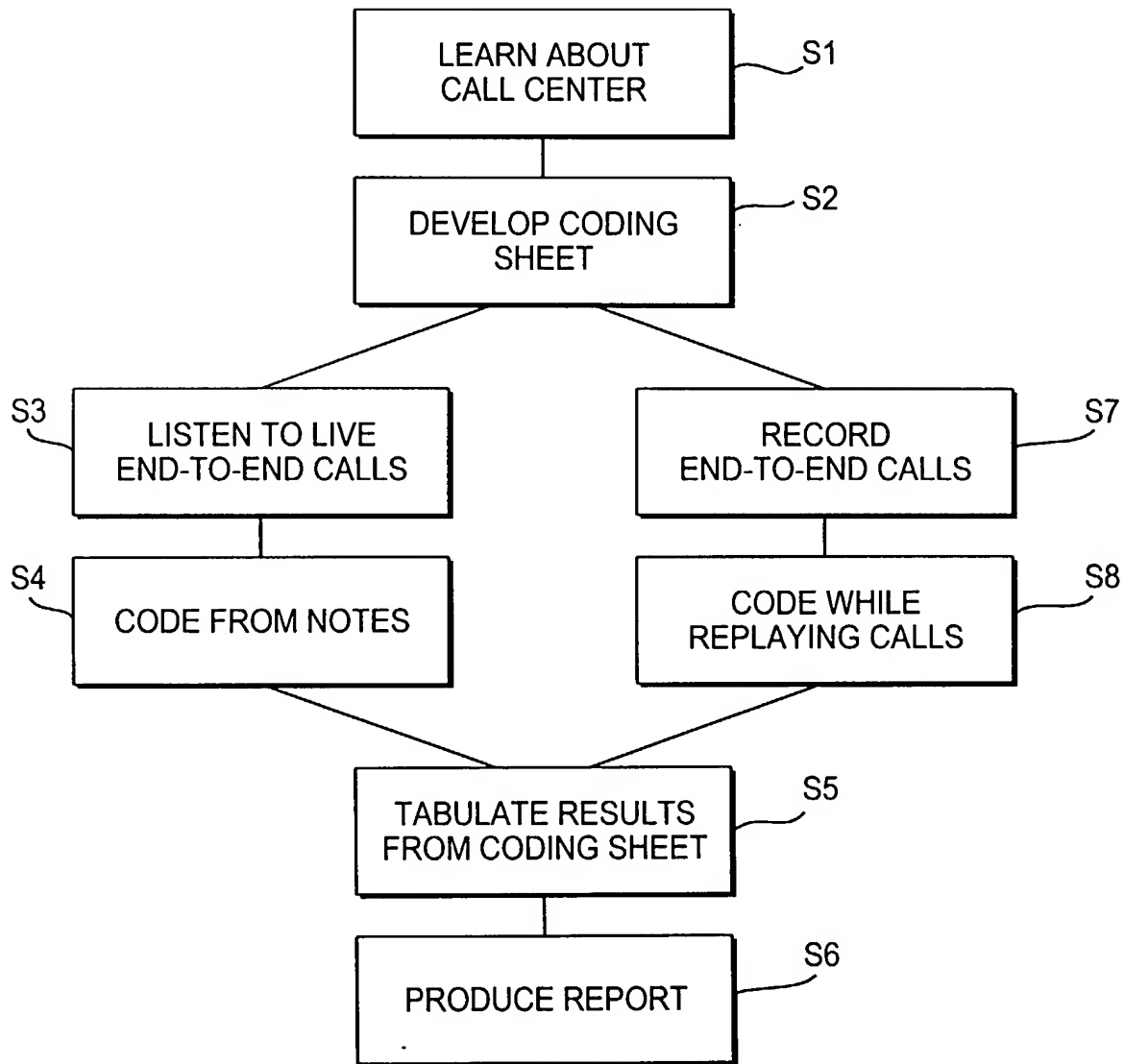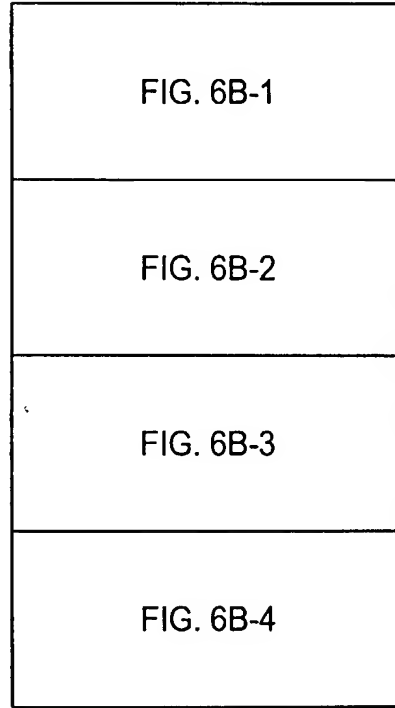| UNIQUE ID	TIME	STATE	OUTCOME
212-123-4567	##,##,##	CALL ARRIVAL	DATE
212-123-4567	##,##,##	INITIAL MENU	TOUCH TONE SELECTION
212-123-4567	##,##,##	ACCOUNT NO. PROMPT	TOUCH TONE NUMBERS PRESSED
212-123-4567	##,##,##	VALIDATE NUMBER	INVALID
212-123-4567	##,##,##	ACCOUNT NO. RE-PROMPT	CALL TERMINATED BY CALLER
201-321-4567	##,##,##	CALL ARRIVAL	DATE
201-321-4567	##,##,##	INITIAL MENU	TOUCH TONE SELECTION
201-321-4567	##,##,##	ACCOUNT NO. PROMPT	TOUCH TONE NUMBERS PRESSED
201-321-4567	##,##,##	VALIDATE NUMBER	VALID
201-321-4567	##,##,##	MENU 1	TOUCH TONE SELECTION
201-321-4567	##,##,##	TRANSFER TO AGENT	TRANSFER COMPLETED
617-987-6543	##,##,##	CALL ARRIVAL	DATE
	...	...	...
617-987-6543	##,##,##	ACCOUNT BALANCE	INFORMATION DELIVERED
617-987-6543	##,##,##	MENU 3	TOUCH TONE ELECTION
617-987-6543	##,##,##	TRANSFER TO AGENT	TRANSFER QUEUE (CALLER ON HOLD)
617-987-6543	##,##,##	IVR END	CALL TERMINATED BY CALLER

FIG. 3F

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FIG. 4

01-4006; Patrick Peterson et al.
APPARATUS AND METHOD FOR LOGGING EVENTS
THAT OCCUR WHEN INTERACTING WITH AN
AUTOMATED CALL CENTER SYSTEM
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FIG. 5

01-4006; Patrick Peterson et al.
APPARATUS AND METHOD FOR LOGGING EVENTS
THAT OCCUR WHEN INTERACTING WITH AN
AUTOMATED CALL CENTER SYSTEM
Express Mail No. EL029404315US

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```
                    ┌──────────────────┐
                    │   LEARN ABOUT    │  ⟍ S1
                    │   CALL CENTER    │
                    └──────────────────┘
                             │
                    ┌──────────────────┐
                    │ DEVELOP CODING   │  ⟍ S2
                    │     SHEET        │
                    └──────────────────┘
                     ╱                ╲
         ┌──────────────────┐   ┌──────────────────┐
    S3 ⟋ │ LISTEN TO LIVE   │   │     RECORD       │ ⟍ S7
         │ END-TO-END CALLS │   │ END-TO-END CALLS │
         └──────────────────┘   └──────────────────┘
                  │                      │
         ┌──────────────────┐   ┌──────────────────┐
    S4 ⟋ │ CODE FROM NOTES  │   │   CODE WHILE     │ ⟍ S8
         │                  │   │ REPLAYING CALLS  │
         └──────────────────┘   └──────────────────┘
                     ╲                ╱
                    ┌──────────────────┐
                    │ TABULATE RESULTS │  ⟍ S5
                    │ FROM CODING SHEET│
                    └──────────────────┘
                             │
                    ┌──────────────────┐
                    │  PRODUCE REPORT  │  ⟍ S6
                    └──────────────────┘
```

FIG. 6A

01-4006; Patrick Peterson et al.
APPARATUS AND METHOD FOR LOGGING EVENTS
THAT OCCUR WHEN INTERACTING WITH AN
AUTOMATED CALL CENTER SYSTEM
Express Mail No. EL029404315US

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FIG. 6B

FIG. 6B-1
FIG. 6B-2
FIG. 6B-3
FIG. 6B-4

01-4006; Patrick Peterson et al.
APPARATUS AND METHOD FOR LOGGING EVENTS
THAT OCCUR WHEN INTERACTING WITH AN
AUTOMATED CALL CENTER SYSTEM
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	10	38	53	64	M-10	M-33	M-71	M-130	M-178	M-215
CALL NUMBER	10	38	53	64	M-10	M-33	M-71	M-130	M-178	M-215
TRANSCRIBER	YJT	YJT	YJT	64	MJW	MJW	MJW	MJW	MJW	MJW
DATE:	12/14/1996	12/17/1996	12/19/1996	27-DEC						
PHONE #:		2121234567	2011234567	9141234567	9731234567	9181234567	7321234567	5161234567	2021234567	7181234567
SEX OF CALLER:		M	M	F	M		F	F	M	M
CLOCK TIME (END OF INTERACTION)	1:58 PM	12:03 PM	2:40 PM	2:21 PM	12:41 PM	14:50:41	14:30:57	9:46:48	12:10:21	12:01:11
DURATION OF INTERACTION (WHOLE MIN)	0	6	12	10	4	0	1	4	9	3
DURATION OF ENTIRE CALL (WHOLE MIN)	0	6	12	11	5	3	3	12	68	5
WAS THIS A FULLY AUTOMATED CALL?	0	0	0	0	0	0	0	0	0	0
DID CALL INVOLVE AN AGENT?	0	1	0	1	1	0	1	1	1	1
DEBUG	0	0	0	0	0	0	0	0	0	0
IVR SUMMARY: (MENU CHOICES)	4	3 1	31	4 0 INVALID BILLING, OTHER	BILLING, OTHER	ADD/CHANGE	REPAIR	NEW, 0	NEW	BILLING, OTHER
(USE WORDS: "PHONE #" "RING" "FAST BUSY"	3	PHONE NO		3	OTHER	ADD/CHANGE		INPUT NUMBER 2.2	2.2	OTHER
"HANG UP" "ROTARY"	HANG UP RING	RING		3	4,3,3	3.1, 973-622-3626				4,3,3
DID CALLER TRY 0 AND FAIL?	0	0	0	1	0	0	0	1	0	0
WAS CALL INCOMPLETE (0 FUNCTIONS?)	0	0	0	0	0	1	0	0	0	0
(IF 1, INDICATE WHICH ONE APPLIES)										
ABANDON AT START OF IVR (RINGING OR INTRO)										
ABANDON AT PHONE # PROMPT										
ABANDON AT CUSTOMER ID PROMPT										
ABANDON AT OTHER PROMPT	1									
ABANDON WHILE RINGING FOR AGENT										
ABANDON AT "ALL OUR AGENTS ARE CURRENTLY"						1				
ABANDON AT FAST BUSY OR SYSTEM BUG										
UNUSUALLY HEAVY CALL VOLUMES										
WHERE IN IVR DID THEY ABANDON										
1 MASTERKEY										
2 NEW SERVICE										
3 ADD/CHANGE										
4 BILLING/OTHER	1					1				
5 REPAIR										
(IF CALLER GOT TO AN AGENT, HOW?)										
BY ROTARY PHONE (0 TONES PRESSED)?						1				
BY AUTO TRANSFER BASED ON PHONE NUMBER?										
THROUGH INTRODUCTION BY PREVIOUS AGENT?							1	1		
IN IVR THROUGH INVALID/TIMEOUT?										
IN IVR, THROUGH A VALID NONZERO TRANSFER?	0	1	1	1	1	0	0	0	1	1
BY PRESSING "0"										
OTHER (DIDN'T CATCH IT)										
INDICATE MENU CHOICES MADE IN IVR										
1 PAY ARRANGEMENTS (MASTER KEY)										
2.1 ORDER NEW SERVICE (WELCOME CENTER)										

FIG. 6B-1

	WANTS TO ADD LONG DISTANCE TO MOTHER'S PHONE AND DROP FREE 30-DAY-TRIAL FEATURES	ANGRY LANDLORD CALLING FOR TENANTS. WARM TRANSFER IN AT START TENANT IN APT 3 MOVING TO APT 4. WAS UNABLE TO GET THROUGH ON A MONDAY AFTER 45 MINUTES.	CUSTOMER UNHAPPY WITH XYZ. WANTS TO SWITCH TO VERIZON REGIONAL. 3-AREA SELECTIVE CALLING.	RECEIVED VZ TELEMARKETING CALL NOT A VZ CUST. AND JUST WANTS TO BE REMOVED FROM TELEMARKETING LIST. BLOCK ADDED TO LINE FOR VZ TELEMRK	CALLER THOUGHT IT WAS A VOICE-RECO SYSTEM AND WHEN PROMPTED FOR PHONE NUMBER, SPOKE IT AND DIDNT PUT IT IN. NEEDS REPAIR DONE ON THE JACK IN HER ROOM. SCHEDULED AN APPT FOR BET. 12-7 TOMORROW.	LEASING A PHONE COSTS MONEY WORRIED THAT SHE THREW A PHONE OUT AND SOMEONE IS USING IT. SHE'S STILL GETTING A BILL FOR IT. PHONE LEASED THROUGH XYZ AND SO IS TRANSFERRED TO XYZ LEASING. W/O HAVING REALISED THAT PHONE IS NOT CONNECTED TO NUMBER AND SHE'S NOT GETTING BILLED FOR OTHER CALLS.	NEW SVC ORDER ASSIGNED A NEW # AND T-> WELCOME CTR.	SON CHECKING ON CALLS THAT HE DOESNT RECOGNIZE SISTER DIALING ID NUMBER FOR INTERNET ACCESS AND SHELL HAVE TO PAY FOR THE CALLS.
2-2 NEW SERVICE - FOLLOW-UP							1	
3-1 ADD/ADD	1	1						
3-2 ADD/REMOVE								
3-3 DISCONNECT								
4-1 BILLING/PHONE DIRECTORY								
4-2 BILLING/UNAUTHORIZED CALLS								
4-3-1 BILLING/OTHER/PAY/MASTER K								
4-3-2 BILLING/OTHER/MASTER KEY								
4-3-3 BILLING/OTHER/OTHER			1	1	1			
5 REPAIR (REPAIR CENTER)								
1-2 (SPANISH)								
(INDICATE FUNCTIONS COMPLETED IN IVR)								
PAYMENT CENTER LOCATION								
PAYMENT CENTER HOURS								
PAYMENT MAILING ADDRESS								
ACCOUNT INFORMATION								
ESTABLISH ACCE USING PIN								
PAYMENT ARRANGEMENTS								
ENTER DETAILS OF LAST PAYMENT								
COPY OF BILL								
COULD THIS HAVE BEEN DONE IN MKTB	0	0	0	0	0	0	0	0
I. AGENT PERFORM AUTOMATED FUNCTIONS?	0	0	0	0	0	0	0	0
INDICATE WHICH ONES)								
PAYMENT CENTER LOCATION								
PAYMENT CENTER HOURS								
PAYMENT MAILING ADDRESS								
ACCOUNT INFORMATION								
ESTABLISH ACCT USING PIN								
PAYMENT ARRANGEMENTS								
ENTER DETAILS OF LAST PAYMENT								
COPY OF BILL								
II. AGENT DO POTENTIALLY AUTO FUNCTIONS?	0	0	0	0	0	0	0	0

AGENT CALL SUMMARY: (PROBLEM + SOLUTION)

FIG. 6B-2

01-4006; Patrick Peterson et al.
APPARATUS AND METHOD FOR LOGGING EVENTS
THAT OCCUR WHEN INTERACTING WITH AN
AUTOMATED CALL CENTER SYSTEM
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	C1	C2	C3	C4	C5	C6	C7	C8	C9
(INDICATE WHICH ONES)									
REQUEST CALLING CARD									
GET VOICE MAIL ACCESS #									
GET 3 + 2 DIGIT NUMBER ON BILL									
GET INFO ON RATES-BY MAIL OR SEE DIRECT.									
GET ADDRESS FOR WRITING TO REFUTE BILL									
OTHER: (POTENTIALLY AUTOMATABLE)	0	1	1	1	1	0	1	0	0
II DID AGENT DO NON-AUTOMATED FUNCTIONS?									
(INDICATE WHICH ONES)									
PAYMENT ARRANGEMENTS									
NEW SERVICE - EXPLAINS 2 PARTS NEEDED									
NEW SERVICE FOLLOW UP (NOT DISCONNECT)									
CHECK ON STATUS OF PENDING ORDER									
SALES (PKGS, SERVICES, LINES, JACKS, ETC)									
SALES (REMOVE FEATURE - AGENT AKS WHY)	1	1	1						
DISCONNECT (AND FORWARD CALLS)									
EXPLAIN BILL									
REMOVE UNAUTHORIZED CALL FROM BILL									
REMOVE OTHER CHARGES FROM BILL									
CONFIRM TODAY'S REPAIR SCHEDULE									
SCHEDULE A VISIT WITH REPAIRMAN				1			1		
TELL HOW/WHEN TO USE FEATURES THEY OWN									
OTHER					S				
WAS THIS CALL CODED ABOVE?	2	2	2	2		3	1	1	2
DID AGENT SEE CALL AS MISDIRECTED?	0	0	1	1		0	1	1	0
DID AGENT TRANSFER THE CALL?	0	0	0	0		0	1	1	0
IV. IF TRANSFERRED TO WHAT DESTINATION?									
800-281-8884 MASTER KEY									
800-275-2355 REPAIR									
800-287-9933 COLLECTION CENTER									
800-870-01000 SERVICE SOLUTIONS									
TPV									
888-243-9733 TOLL BILLING									
800-246-2800 UNLAWFUL CALL SOL CTR									
800-585-6127 INSTALLATION HOTLINE									
877-525-2375 DSL									
800-427-9977 "BUSINESS OFFICE"									
DMC									
NEW SERVICE FOLLOWUP									
DISCONNECT									
TELL HOW TO USE FEATURES									
WELCOME CENTER									
BUSINESS ACCOUNTS								1	

FIG. 6B-3

01-4006; Patrick Peterson et al.
APPARATUS AND METHOD FOR LOGGING EVENTS
THAT OCCUR WHEN INTERACTING WITH AN
AUTOMATED CALL CENTER SYSTEM
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Row labels (top to bottom):

- DIFFERENT CARRIER
- SUPERVISOR
- TRANSFER TO SPANISH AGENT
- WAS TRANSFER WARM (AGENT STAYED)?
- DURATION WITH SECOND AGENT?
- FURTHER TRANSFERS?
- (IF YES)
- TOTAL NUMBER OF AGENTS INVOLVED
- EXPLAIN:
- TOPIC SUMMARY
- PAYMENT ARRANGEMENT
- NEW SERVICE
- ORDER FOLLOW-UP
- SALES - ADD
- SALES-REMOVE
- DISCONNECT
- BALANCE/COPY...
- OTHER
- REPAIR
- SPANISH
- REROUTE
- ROUTING SUMMARY
- 1 OR 4-3-1 PAY ARRANGEMENTS (MASTER KEY)
- 2-1 ORDER NEW SERVICE (WELCOME CENTER)
- 2-2 NEW SERVICE - FOLLOW-UP
- 3-1 ADD/ADD
- 3-2 ADD/REMOVE
- 3-3 DISCONNECT
- 4-1 BILLING/PHONE DIRECTORY
- 4-2 BILLING (UNAUTHORIZED CALLS
- 4-3-2 BALANCE/COPY/LOCATIONS/LAST PAYMENT
- 4-3-3-OTHER
- 5 REPAIR (REPAIR CENTER)
- 1-2 (SPANISH)
- ROTARY (INITIAL TIMEOUT)
- INVALID_TIMEOUT, OR "0" ONCE IN IVR
- OTHER (UNKNOWN)

EXPLAIN note: "XYZ EXPLAINED THAT LEASING IS ENDED AND THE PHONE ISN'T CONNECTED TO HER BILLING NUMBER. 2ND AGENT ASSIGNS RATE PLAN, ETC."

FIG. 6B-4

01-4006; Patrick Peterson et al.
APPARATUS AND METHOD FOR LOGGING EVENTS
THAT OCCUR WHEN INTERACTING WITH AN
AUTOMATED CALL CENTER SYSTEM
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FIG. 6C

FIG. 6C-1
FIG. 6C-2
FIG. 6C-3
FIG. 6C-4

01-4006; Patrick Peterson et al.
APPARATUS AND METHOD FOR LOGGING EVENTS
THAT OCCUR WHEN INTERACTING WITH AN
AUTOMATED CALL CENTER SYSTEM
Express Mail No. EL029404315US

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	A	C	D	E
1	CALL NUMBER	ALL CALLS STATISTICS		
2	TRANSCRIBER			
3	DATE:			
4	PHONE #:			
5	SEX OF CALLER:			
6	CLOCK TIME (END OF INTERACTION)			
7	DURATION OF INTERACTION (WHOLE MIN)	5.123042506	0%	
8	DURATION OF ENTIRE CALL (WHOLE MIN)	7.548098434	0%	
9	WAS THIS A **FULLY AUTOMATED CALL?**	14	3%	
10	DID CALL INVOLVE AN AGENT?	339	447	
11				
12	IVR SUMMARY: (MENU CHOICES)	0	0%	
13	(USE WORDS: "PHONE #" "RING" "FAST BUSY"	0	0%	
14	"HANG UP" "ROTARY"	0	0%	
15				
16	DID CALLER TRY 0 AND FAIL?	30	7%	
17	**WAS CALL INCOMPLETE (O FUNCTIONS?)**	94	21%	
18	[IF 1, INDICATE WHICH ONE APPLIES]	0	0%	
19	ABANDON AT START OF IVR (RINGING OR INTRO)	0	0%	
20	ABANDON AT PHONE # PROMPT	4	1%	
21	ABANDON AT CUSTOMER ID PROMPT	2	0%	
22	ABANDON AT PROMPT	22	5%	
23	ABANDON WHILE RINGING FOR AGENT	2	0%	
24	ABANDON AT "ALL OUR AGENTS ARE CURRENTLY"	4	1%	
25	ABANDON AT FAST BUSY OR SYSTEM BUG	14	3%	
26	UNUSUALLY HEAVY CALL VOLUMES	17	4%	
27	OTHER:	29	6%	
28	**WHERE IN IVR DID THEY ABANDON**			
29	1 MASTERKEY	20	4%	
30	2 NEW SERVICE	3	1%	
31	3 ADD/CHANGE	13	3%	
32	4 BILLING/OTHER	12	3%	
33	5 REPAIR	2	0%	
34	OTHER	18	4%	
35				
36	**[IF CALLER GOT TO AN AGENT, HOW?]**	0	0%	
37	BY ROTARY PHONE (0 TONES PRESSED)?	62	14%	
38	BY AUTO TRANSFER BASED ON PHONE NUMBER?	0	0%	
39	THROUGH INTRODUCTION BY PREVIOUS AGENT?	0	0%	
40	IN IVR THROUGH IVALID/TIMEOUT?	28	6%	
41	**IN IVR, THROUGH A VALID NONZERO TRANSFER?**	228	51%	
42	BY PRESSING "0"	19	4%	
43	OTHER (DIDN'T CATCH IT)	2	0%	
44	INDICATE MENU CHOICES MADE IN IVR	0	0%	
45	**1. PAY ARRANGMENTS (MASTER KEY)**	12	3%	
46	2-1 ORDER NEW SERVICE (WELCOME CENTER)	28	6%	
47	2-2 NEW SERVICE - FOLLOW -UP	37	8%	
48	3-1 ADD/ADD	64	14%	
49	3-2 ADD/REMOVE	12	3%	

FIG. 6C-1

01-4006; Patrick Peterson et al. ⬛⬛⬛⬛⬛⬛⬛⬛ ⬛⬛⬛⬛⬛⬛
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	A	C	D	E
50	3-3 DISCONNECT	11	2%	
51	4-1 BILLING/PHONE DIRECTORY	1	0%	
52	4-2 BILLING/ UNAUTHOURIZED CALLS	11	2%	
53	4-3-1 BILLING/OTHER/PAY/MASTER K	3	1%	
54	4-3-2 BILLING/OTHER/MASTER KEY	11	2%	
55	4-3-3 BILLING/OTHER/OTHER	71	16%	
56	5 REPAIR (REPAIR CENTER)	14	3%	
57	1-2 (SPANISH)	1	0%	
58	[INDICATE FUNCTIONS COMPLETED IN IVR]	0	0%	
59	PAYMENT CENTER LOCATION	3	1%	
60	PAYMENT CENTER HOURS	0	0%	
61	PAYMENT MAILING ADDRESS	2	0%	
62	ACCOUNT INFORMATION	14	3%	
63	ESTABLISH ACCT USING PIN	0	0%	
64	PAYMENT ARRANGEMENTS	1	0%	
65	ENTER DETAILS OF LAST PAYMENT	0	0%	
66	COPY OF BILL	0	0%	
67	ORDER PHONE DIRECTORY	0	0%	
68	IDENTIFY UNAUTH CALL	4	1%	
69	GET 800 # TO IDENTIFY UNAUTH CALLS-ETC.	3	1%	
70				
71	AGENT CALL SUMMARY: (PROBLEM + SOLUTION)			
72				
73				
74	COULD THIS HAVE BEEN DONE IN MK/TB	24	5%	
75				
76	I. DID AGENT PERFORM AUTOMATED FUNCTIONS?	25	6%	
77	[INDICATE WHICH ONES]			
78	PAYMENT CENTER LOCATION	0	0%	
79	PAYMENT CENTER HOURS	0	0%	
80	PAYMENT MAILING ADDRESS	0	0%	
81	ACCOUNT INFORMATION	9	2%	
82	ESTABLISH ACCT USING PIN	0	0%	
83	PAYMENT ARRANGEMENTS	5	1%	
84	ENTER DETAILS OF LAST PAYMENT	0	0%	
85	COPY OF BILL	5	1%	
86	ORDER PHONE DIRECTORY	1	0%	
87	IDENTIFY ABC UNAUTH CALL	5	1%	
88	IDENTIFY XYZ ETC. UNAUTH CALL	0	0%	
89				
90	II. DID AGENT DO POTENTIALLY AUTO FUNCTIONS?	16	4%	
91	[INDICATE WHICH ONES]			
92	FIND TOLL CALL RANGE	8	0%	
93	REQUEST CALLING CARD			
94	GET VOICE MAIL ACCESS #	3	0%	
95	GET 3+2 DIGIT NUMBER ON BILL	2	0%	
96	GET INFO ON RATES-BY MAIL OR SEE DIRECT	0	0%	
97	GET ADDRESS FOR WRITING TO REFUTE BILL	0	0%	

FIG. 6C-2

01-4006; Patrick Peterson et al. ▮▮▮▮▮▮▮▮▮ ▮▮▮▮▮▮▮
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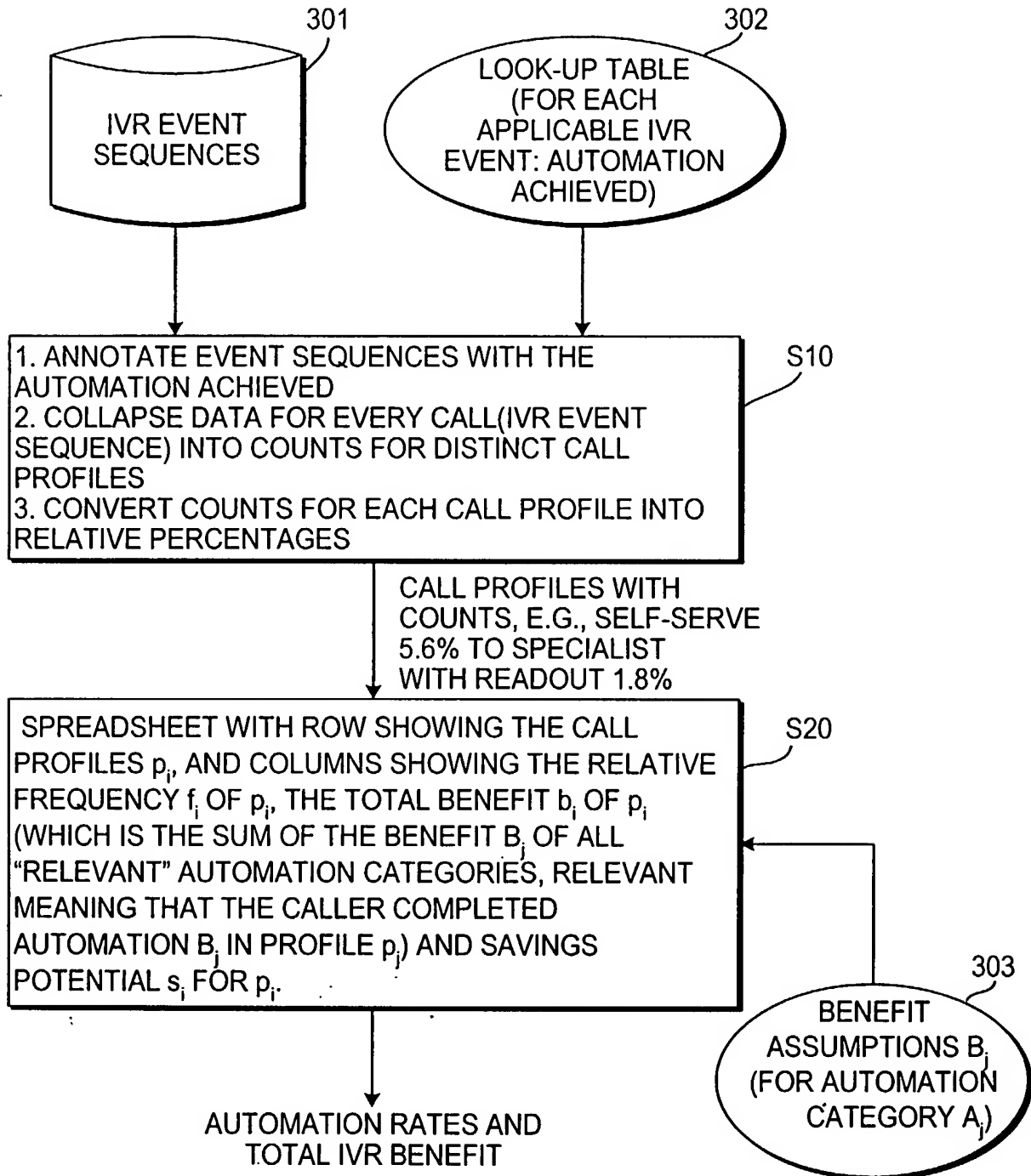|	A	C	D	E
98	OTHER: (POTENTIALLY AUTOMATABLE)	3	0%	
99				
100	III. DID AGENT DO NON-AUTOMATED FUNCTIONS?	220	49%	
101	[INDICATE WHICH ONES]			
102	PAYMENT ARRANGEMENTS	5	1%	
103	NEW SERVICE- EXPLAINS 2 PARTS NEEDED	21	5%	
104	NEW SERVICE FOLLOW UP (NOT DISCONNECT)	10	2%	
105	CHECK ON STATUS OF PENDING ORDER	6	0%	
106	SALES (PKGS, SERVICES, LINES, JACKS, ETC)	65	15%	
107	SALES (REMOVE FEATURE- AGENT ASKS WHY)	16	4%	
108	DISCONNECT (AND FORWARD CALLS)	9	2%	
109	EXPLAIN BILL	25	6%	
110	REMOVE UNAUTHORIZED CALL FROM BILL	4	1%	
111	REMOVE OTHER CHARGES FROM BILL	2	0%	
112	CONFIRM TODAY'S REPAIR SCHEDULE	3	1%	
113	SCHEDULE A VISIT WIHT REPAIRMAN	8	2%	
114	TELL HOW/WHEN TO USE FEATURES THEY OWN	12	3%	
115	OTHER	34	8%	
116	WAS THIS CALL CODED ABOVE?	675	579	
117	DID AGENT SEE CALL AS MISDIRECTED?	81	18%	
118	DID AGENT TRANSFER THE CALL?	82	18%	
119	IV. IF TRANSFERRED, TO WHAT DESTINATION?	0	0%	
120	800-281-8584 MASTER KEY	0	0%	
121	800-275-2355 REPAIR	12	3%	
122	800-287-9933 COLLECTION CENTER	10	2%	
123	800-870-0000 SERVICE SOLUTIONS	0	0%	
124	TPV	1	0%	
125	888-243-9733 TOLL BILLING	9	2%	
126	800-246-2800 UNLAWFUL CALL SOL CTR	0	0%	
127	800-585-6127 INSTALLATION HOTLINE	11	2%	
128	877-525-2375 DSL	2	0%	
129	800-427-9977 "BUSINESS OFFICE"	1	0%	
130	DMC	1	0%	
131	NEW SERVICE FOLLOWUP	1	0%	
132	DISCONNECT	1	0%	
133	TELL HOW TO USE FEATURES	1	0%	
134	WELCOME CENTER	10	2%	
135	BUSINESS ACCOUNTS	2	0%	
136	ISP CALL/VERIZON ONLINE	2	0%	
137	WIRELESS	3	1%	
138	DIFFERENT CARRIER	2	0%	
139	SUPERVISOR	0	0%	
140	OTHER	3	1%	
141	TRANSER TO SPANISH AGENT	6	1%	
142	WAS TRANSER WARM (AGENT STAYED)?	34	8%	
143	DURATION WITH SECOND AGENT?	663	0.292715232	
144	FURTHER TRANSFERS?	14	3%	
145	[IF YES]			
146	TOTAL NUMBER OF AGENTS INVOLVED	205	9%	

FIG. 6C-3

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	A	C	D	E
147				
148	EXPLAIN:			
149				
150	**TOPIC SUMMARY**			
151	PAYMENT ARRANGEMENT	10		
152	NEW SERVICE	21		
153	ORDER FOLLOW-UP	16		
154	SALES-ADD	65		
155	SALES-REMOVE	16		
156	DISCONNECT	9		
157	PHONE DIRECTORY	1		
158	IUNAUTHORIZED CALLS	9		
159	BALANCE/COPY...	14		
160	OTHER	89		
161	REPAIR	11		
162	SPANISH	6		
163	REROUTE			
164		267		
165				
166				
167				
168				
169				
170				
171				
172				
173				
174	**ROUTING SUMMARY**			
175	1 OR 4-3-1 PAY ARRANGMENTS (MASTER KEY)			
176	2-1 ORDER NEW SERVICE (WELCOME CENTER)			
177	2-2 NEW SERVICE-FOLLOW-UP			
178	3-1 ADD/ADD			.
179	3-2 ADD/REMOVE			
180	3-3 DISCONNECT			
181	4-1 BILLING/PHONE DIRECTORY			.
182	4-2 BILLING/UNAUTHORIZED CALLS			
183	4-3-2 BALANCE/COPY/LOCATIONS/LAST PAYMENT			
184	4-3-3 OTHER			
185	5 REPAIR (REPAIR CENTER)			
186	1-2 (SPANISH)			
187	ROTARY (INITIAL TIMEOUT)		.	
188	INVALID, TIMEOUT, OR "0" ONCE IN IVR			
189	OTHER (UNKNOWN)			

FIG. 6C-4

01-4006; Patrick Peterson et al.
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DATA	CONCLUSION
1. CUSTOMER ROUTES SELF IN IVR TO WRONG AGENT 2. AGENT TRANSFERS CUSTOMER IN RESPONSE TO CUSTOMER NEED.	MISROUTING (2 OR MORE AGENTS INVOLVED INSTEAD OF 1)
1. CUSTOMER ROUTES SELF IN IVR TO WRONG AGENT 2. AGENT PERFORMS FUNCTION ANYWAY.	MISROUTING (WRONG AGENT INVOLVED)
1. AGENT PERFORMS FUNCTION. 2. FUNCTION IS AVAILABLE IN IVR.	UNDERUTILIZATION OF IVR FUNCTIONALITY.
1. AGENT PERFORMS FUNCTION 2. FUNCTION NOT CURRENTLY AVAILABLE IN IVR. 3. FUNCTION COULD POTENTIALLY BE ADDED	IVR MISSING CRUCIAL FUNCTIONALITY
1. CUSTOMERS OPTING OUT OF IVR AT FEW POPULAR POINTS. 2. IVR DOES NOT PROMPT FOR ID AT THE POINT.	MISSED OPPORTUNITY FOR AUTOMATED CUSTOMER DATA INPUT
1. AGENT STAYS ON THE LINE DURING TRANSER 2. POLICY DOES NOT ADVOCATE A "WARM TRANSFER"	POSSIBLE POLICY VIOLATION (REGARDING WARM TRANSFERS)
1. AGENT STAYS ON THE LINE DURING TRANSFER 2. TIME ON HOLD WITH CUSTOMER SUGGESTS AGENT NOT USING SPECIAL QUEUE FOR TRANSFER	POSSIBLE POLICY VIOLATION (REGARDING USE OF FAST QUEUE FOR AGENT TRANSFERS)
1. # CUSTOMERS REMAINING SILENT IN IVR 2. PERCENTAGE OF ROTARY USERS KNOWN 3. IF 1 SUBSTANTIALLY EXCEEDS 2	CUSTOMERS REFUSING TO PLAY THE GAME
1. # COSTUMERS COOPERATING IN IVR 2. # CUSTOMERS GETTING READOUT BEFORE ABANDONING IF 1 SUBSTANTIALLY EXCEEDS 2	CUSTOMERS RECEIVING NO BENEFIT FROM IVR THOUGH WILLING TO TRY
1. # CALLS 2. # CALLERS COMPLETING AT LEAST 1 FUNCTIONS IN IVR (INCLUDING GETTING READOUT) AND NOT GOING TO AGENT IF 1 SUBSTANTIALLY EXCEEDS 2	LOW "COMPLETE-SELF-SERVE" RATE

FIG. 6D

01-4006; Patrick Peterson et al.
APPARATUS AND METHOD FOR LOGGING EVENTS
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IVR EVENT
SEQUENCES

302

LOOK-UP TABLE
(FOR EACH
APPLICABLE IVR
EVENT: AUTOMATION
ACHIEVED)

1. ANNOTATE EVENT SEQUENCES WITH THE
AUTOMATION ACHIEVED
2. COLLAPSE DATA FOR EVERY CALL(IVR EVENT
SEQUENCE) INTO COUNTS FOR DISTINCT CALL
PROFILES
3. CONVERT COUNTS FOR EACH CALL PROFILE INTO
RELATIVE PERCENTAGES

S10

CALL PROFILES WITH
COUNTS, E.G., SELF-SERVE
5.6% TO SPECIALIST
WITH READOUT 1.8%

SPREADSHEET WITH ROW SHOWING THE CALL
PROFILES p_i, AND COLUMNS SHOWING THE RELATIVE
FREQUENCY f_i OF p_i, THE TOTAL BENEFIT b_i OF p_i
(WHICH IS THE SUM OF THE BENEFIT B_j OF ALL
"RELEVANT" AUTOMATION CATEGORIES, RELEVANT
MEANING THAT THE CALLER COMPLETED
AUTOMATION B_j IN PROFILE p_j) AND SAVINGS
POTENTIAL s_i FOR p_i.

S20

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BENEFIT
ASSUMPTIONS B_j
(FOR AUTOMATION
CATEGORY A_j)

AUTOMATION RATES AND
TOTAL IVR BENEFIT

FIG. 7

01-4006; Patrick Peterson et al.
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CALL PROFILE (P$_j$)	TRAFFIC (f$_i$)		AUTOMATION (B$_{ji}$)			BENEFIT (AGENT SECS)	
	CALLS	% CALLS	ACCOUNT #	ROUTING	INFO DELIVERY	ONE CALL	AVERAGE
FULLY-AUTOMATED CALLS	72	2.0%	A	R	—	105	2.1
TRANSFERS TO SPECIALIST AFTER INFORMATION READOUT	1	0.0%	A	R	—	105	0.0
TRANSFERS TO FLOOR AFTER INFO READOUT	38	1.0%	A		—	55	0.6
TRANSFERS TO SPECIALIST W/ ID	849	23.4%		R		40	9.3
TRANSFERS TO FLOOR W/ ID	1008	27.7%	A			15	4.2
TRANSFERS TO FLOOR W/O ID	591	16.3%					
MISROUTED TO SPECIALIST W/ ID	389	10.7%	A	-R		-25	-2.7
MISROUTED TO SPECIALIST W/O ID	6	0.2%		-R		-40	-0.1
ABANDONS	681	18.7%					
TOTAL	3636	100.0%	41.5%	14.5%	3.1%		13.4

FIG. 8

01-4006; Patrick Peterson et al.
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AUTOMATION CATEGORY	CALLER IDENTIFICATION ("A")	INFORMATION DELIVERY ("I")	ROUTING ("R")
ASSUMED BENEFIT [AGENT SECS]	15	40	40

FIG. 9

01-4006; Patrick Peterson et al.
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AUTOMATABLE TRANSACTIONS	#OCCURRENCES	TIME SPENT	FREQUENCY	SAVINGS POTENTIAL	AUTOMATION CATEGORY
ACCOUNT_BALANCE	88	27.31	21.5%	5.9	I
NEW_PAYMENT_ARRANGEMENT	56	20.94	13.7%	2.9	T
CURRENT_PAYMENT_ARRANGEMENT	9	22.08	2.2%	0.5	I
ZIP_CODE	2	9.48	0.5%	0.0	A
PAYMENT_LOCATION	18	21.3	4.4%	0.9	I
BALANCED_PAYMENT_PLAN_AMOUNT	6	21.8	1.5%	0.3	I
RULES_12_AND_22	11	13.5	2.7%	0.4	I
NEW_APPOINTMENT_DATE_TIME	84	14.51	20.5%	3.0	A
IS_GAS_APPLIANCE	3	24.75	0.7%	0.2	A
IS_NOT_GAS_APPLIANCE	3	9.22	0.7%	0.1	A
NEW_APPOINTMENT_CONFIRMATION_TELEP	82	18.26	20.0%	3.7	A
NEW_APPOINTMENT_LOCATION	66	15.19	16.1%	2.5	A
NEW_APPOINTMENT_DOG	57	11.72	13.9%	1.6	A
NEW_APPOINTMENT_MULTI_OR_SINGLE		0	0.0%	0.0	A
NEW_APPOINTMENT_ADULT_PRESENT	5	5.29	1.2%	0.1	A
APPOINTMENT_DETAILS_CONFIRMATION	13	36.14	3.2%	1.1	T
TOTAL NUMBER OF ANNOTATED CALLS	409			23.1	

%HANDLED BY AGENT 72%

WEIGHTED OPPORTUNITY: 16.6

FIG. 10

01-4006; Patrick Peterson et al.
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AUTOMATION CATEGORIES

CUSTOMER CONTACT TYPE	% CALLS	CUSTOMER ID	ROUTING	INFO DELIVERY	TRANSACTION
CUSTOMER SERVICE	8.7%	X			
BALANCE BILLING	36.7%	X	X	X	
PAYMENT ARRANGEMENTS	13.0%	X	X	X	X
PAYMENT OPTIONS	4.0%	X	X	X	
TURN ON	3.0%				
RATES	1.3%		X	X	
STOP SERVICE	3.5%	X			
SERVICE	11.5%	X			
APPOINTMENT	16.5%	X	X	X	X
EMERGENCY	1.8%	X			
TOTAL/UPPER BOUNDS	100.0%	95.7%	71.5%	71.5%	29.5%

HOW TO TRANSFORM UPPER BOUNDS ON AUTOMATION TO AGENT TIME SAVING OPPORTUNITIES:

		CUSTOMER ID	ROUTING	INFO DELIVERY	TRANSACTION
BENEFIT ASSUMPTION [AGENT SECS PER CALL]		15	5	40	40
BENEFIT [AGENT SECS]		14.355	3.575	28.6	11.8
TOTAL OPPORTUNITY	58.33				

95.7% x 15 = 14.355

FIG. 11

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FIG. 12

EXISTING AUTOMATION LEVELS AND UPPER BOUNDS ON AUTOMATION RATES

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FIG. 13

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START

4319 (*100.0*, 100.0)

DIAGRAM
"STATE"CORRESPONDS
TO ONE OR MORE IVR
INTERACTIONS WITH
CALLER (PROMPT,
RESPONSE, AND
RESULTING ACTION)
THIS ID_ENTRY STATE
INCLUDES TIMEOUT AND
ERROR RETIRES.

GREETING

234 (*5.4*, 5.4) ABANDON

4085
(*94.6*,94.6)

311(*7.6*, 7.2) TO_FLOOR_NEW
ACCOUNT
186(*4.6*, 4.3) TO_FLOOR
46(*1.1*, 1.1) ABANDON

OPENING_MENU

3542
(*86.7*,82.0)

ID_ENTRY

366(*10.3*, 8.5) ABANDON

415
(*11.7*, 9.6)

BREAKDOWN OF IVR
EXIT CONDITIONS
(TRANSFERS AND
HANGUPS)

ALT_ID_ENTRY

274 (*66.0*, 6.3) TO_FLOOR
82 (*19.8.* 1.9) ABANDON

2761(*78.0*,63.9)

CALLS FOLLOWING
THIS PATH

AS A PERCENTAGE OF
CALLS LEAVING THE
STATE

AS A PERCENTAGE OF
TOTAL CALLS

59(*14.2*,1.4)

1045(*36.4*, 24.2)
SPECIALIST_TYPE_1
105(*3.7*, 2.4) SPECIALIST_TYPE_2
77(*2.7*,1.8) SPECIALIST_TYPE_3
3(*0.1*,0.1)SELF_SERVE
4(*0.1*,0.1)TO_FLOOR_AFTER_
READOUT
31(*1.1*,0.7) TO_FLOOR
74(*2.6*, 1.7) ABANDON

FIG. 14

MAIN_MENU

566(*19.7*,13.1)

966(*33.6*,22.3)

31(*3.2*,0.8)
LOOPBACKS

SUB_MENU

IVR
EXITS

11(*1.9*,0.3)
LOOPBACKS

OTHER_OPTIONS

IVR
EXITS

CONTINUATIONS

CONTINUATIONS

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500

IVR EVENT
SEQUENCES

600

CALL FLOW
MODEL

700

LOOK-UP TABLE
(FOR EACH APPLICABLE
IVR EVENT: AUTOMATION
ACHIEVED)

S1001

FOR EVERY IVR EVENT SEQUENCE:
1. INCREMENT TRANSITION AND MODALITY COUNTER FOR EVERY
STATE TRANSITION IN THE EVENT SEQUENCE
2. INCREMENT THE APPROPRIATE EXIT CONDITION COUNTER AT THE
IVR EXIT POINT, INCLUDING THE LEVEL OF AUTOMATION ACHIEVED

S1002

VISUALIZE STATE TRANSITION DATA

800

USER-PATH DIAGRAM

FIG. 15

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EACH STATE DESCRIBES ONE OR MORE IVR-CALLER INTERACTIONS (PROMPT, REPONSE, AND RESULTING ACTION).

1156 WENT FROM THE MAIN STATE TO THE SERVICES MENU STATE

39 CIRCLED BACK AGAIN

SERVICES MENU (13.00) 1254

39(3.1,0.4)

1156(12.2,10.9)

9227 (89.8,87.2)

6.9 PERCENT OF THE TOTAL CALLS TOOK THIS PATH

10432 TOTAL CALLS COMING IN TO THE CALL CENTER

START

GREETING

MAIN (2.00) 9457

10278 (97.1,97.1)

154(1.5,1.5) MISC_END

729 (7.1, 6.9) CUSTOMER SERVICE

2818 (29.8, 26.6) CUSTOMER SERVICE 221 (2.3,2.1) ABANDON

7.1 PERCENT OF ALL CALLS THAT ENTERED GREETING TOOK THIS PATH.

729 CALLS LEFT THE GREETING STATE TO GO TO A CUSTOMER SERVICE REPRESENTATIVE

TWO BRANCHES ARE COLLAPSED HERE: 2818 TO CUSTOMER SERVICE 221 ABANDONED

FIG. 15A

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TRUE CALL TYPE (FROM AGENT INTERACTION)

CALLER'S TT MENU CHOICE	SPECIALTY 1	SPECIALTY 2	SPECIALTY 3	FLOOR	CALLS BY ROUTING	CORRECTLY ROUTED
SPECIALTY 1	33	0	16	16	65	51%
SPECIALTY 2	0	24	0	0	24	100%
SPECIALTY 3	0	2	8	0	10	80%
FLOOR	22	10	26	150	208	72%
CALLS BY TRUE TOPIC	55	36	50	166	307	
TOPIC VOLUME	18%	12%	16%	54%	100%	
CORRECTLY IDENTIFIED	60%	67%	16%	90%		70% OVERALL ACCURACY

DIAGONAL = CORRECTLY ROUTED
OTHERS = MISROUTED

FIG. 16

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FIG. 16A

01-4006; Patrick Peterson et al.
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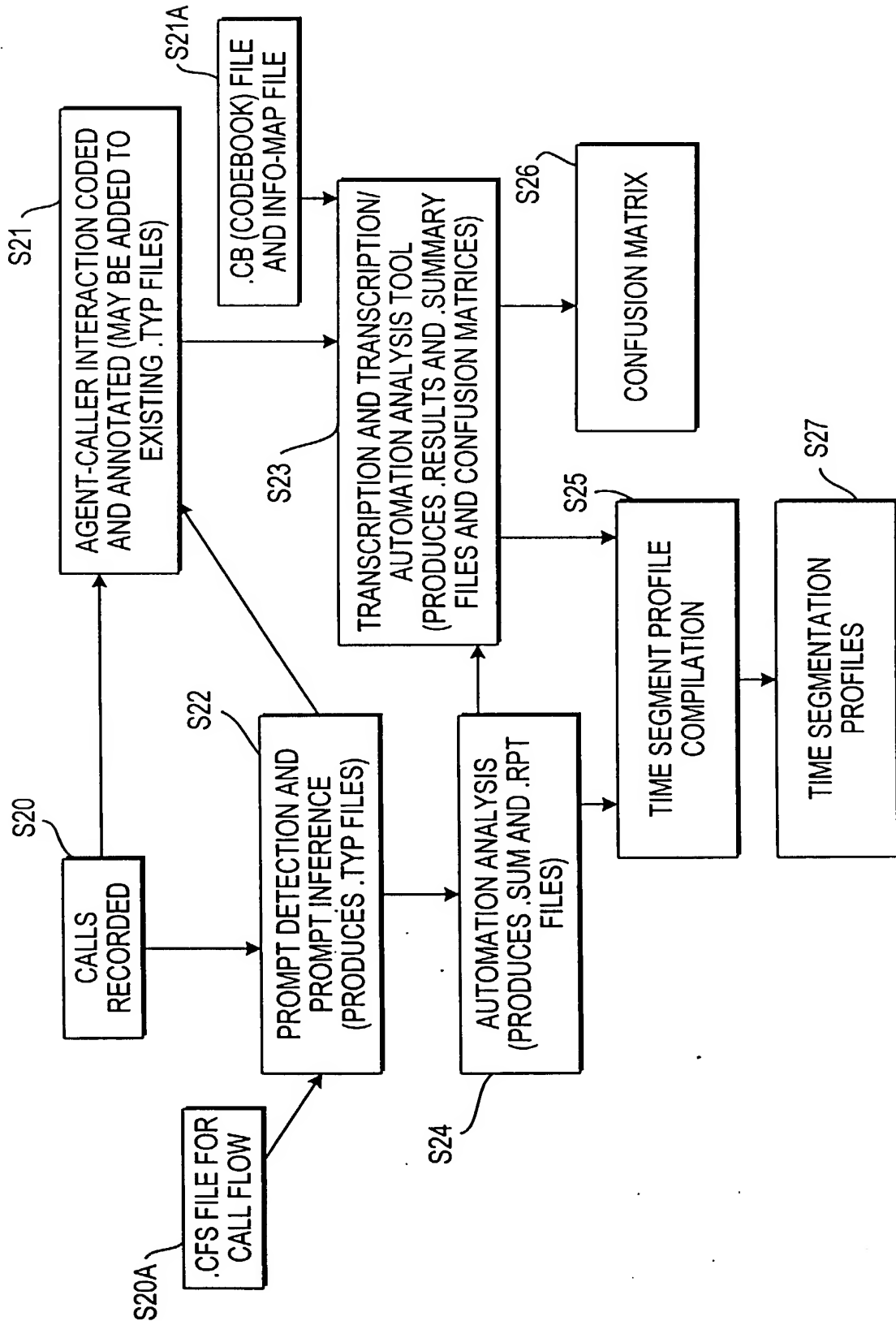
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	A	B	C	D	E	F	G	H
1	FILENAME	IVR EXIT	IVR ROUTING	IVR INFORMATION	IVR ROUTING DEST	FIRST AGENT	FIRST AGENT	FIRST TOPIC
2	/D4M/TRANS/	INCOMPLETE	P-AGT_STARTHOMESERVICE	RULES_12_AND_22_READOUT	TURNON			STRT
3	/D4M/TRANS/	INCOMPLETE	P-AGT_CSRFROMNEWPAY	CALLING_FROM_SERVICE_LOCATION,CONFIRM_ADDR	PAYMENTX			PAY-CHG
4	/D4M/TRANS/	INCOMPLETE	P-AGT_NEWPAYMENTARRAN	CALLING_FROM_SERVICE_LOCATION,TELEPHONE,CO	PAYMENTX			PAY-MAK
5	/D4M/TRANS/	INCOMPLETE	P-AGT_XFERFROMTELEPHON	CALLING_FROM_SERVICE_LOCATION,CONFIRM	BALANCEBILLING			PAY-MAK
6	/D4M/TRANS/	INCOMPLETE	P-AGT_CSRFROMBILLING		BALANCEBILLING			ECI
7	/D4M/TRANS/	INCOMPLETE	P-AGT_CSRFROMBILLING		BALANCEBILLING			RSTR
8	/D4M/TRANS/	INCOMPLETE	P-AGT_DUPSTATFAILURE	CALLING_FROM_SERVICE_LOCATION,TELEPHONE	BALANCEBILLING			OTH
9	/D4M/TRANS/	INCOMPLETE	P-AGT_CSRFROMMAIN		CUSTOMERSERVICE			PAY-MAK
10	/D4M/TRANS/	INCOMPLETE	P-AGT_CSRFROMMAIN		CUSTOMERSERVICE			PAY-REV
11	/D4M/TRANS/	INCOMPLETE	P-AGT_XFERFROMCONFIRMA	CALLING_FROM_SERVICE_LOCATION,CONFIRM_ADDR	PAYMENTX			PAY-MAK
12	/D4M/TRANS/	INCOMPLETE	P-AGENT_START.COMM	RULES_12_AND_22_READOUT	TURNON			CHNG
13	/D4M/TRANS/	INCOMPLETE	P-AGT_NEWPAYMENTARRAN	CALLING_FROM_SERVICE_LOCATION,CONFIRM_ADDR	PAYMENTX			PAY-MAK
14	/D4M/TRANS/	INCOMPLETE	P-AGT_STARTCLEANANDSHO	RULES_12_AND22_READOUT	TURNON			CHNG
15	/D4M/TRANS/	INCOMPLETE	P-AGT_CSRFROMBILLING		BALANCEBILLING			PAY-MAK
16	/D4M/TRANS/	INCOMPLETE	P-AGT_CSRFROMNEWPAY	CALLING_FROM_SERVICE_LOCATION,CONFIRM_ADDR	PAYMENTX			PAY-MAK
17	/D4M/TRANS/	INCOMPLETE	P-AGT_CSRFROMMAIN		CUSTOMERSERVICE			PAY-MAK
18	/D4M/TRANS/	INCOMPLETE	P-AGT_CSRFROMDUPLICATE	CALLING_FROM_SERVICE_LOCATION,TELEPHONE,CO	BALANCEBILLING			ECI
19	/D4M/TRANS/	INCOMPLETE	P-AGT_STARTGASHOME	RULES_12_AND_22_READOUT	TURNON			STRT
20	/D4M/TRANS/	INCOMPLETE	P-AGT_XFERFROMTELEPHON	CALLING_FROM_SERVICE_LOCATION,TELEPHONE	PAYMENTX			BAL
21	/D4M/TRANS/	INCOMPLETE	P-AGT_NEWPAYMENTARRAN	CALLING_FROM_SERVICE_LOCATION,CONFIRM_ADDR	PAYMENTX			PAY-MAK
22	/D4M/TRANS/	INCOMPLETE	P-AGT_XFERFROMTELEPHON	CALLING_FROM_SERVICE_LOCATION,TELEPHONE	BALANCEBILLING			PAY-MAK
23	/D4M/TRANS/	INCOMPLETE	P-AGT_XFERFROMCONFIRMA	CALLING_FROM_SERVICE_LOCATION,TELEPHONE,CO	PAYMENTX			PAY
24	/D4M/TRANS/	INCOMPLETE	P-AGT_CSRFROMMAIN		CUSTOMERSERVICE			OTH
25	/D4M/TRANS/	INCOMPLETE	P-AGT_CSRFROMMAIN		CUSTOMERSERVICE			PAY-MAK
26	/D4M/TRANS/	INCOMPLETE	P-AGENT-ID-MAKE-APPOINTM		APPOINTMENT			RSTR
27	/D4M/TRANS/	INCOMPLETE	P-AGT_CSRFROMMAIN		CUSTOMERSERVICE			RSTR
28	/D4M/TRANS/	INCOMPLETE	P-AGT_STARTHOMESERVICE	RULES_12_AND_22_READOUT	TURNON			STRT
29	/D4M/TRANS/	INCOMPLETE	P-AGT_CSRFROMMAIN		CUSTOMERSERVICE			PAY-MAK
30	/D4M/TRANS/	INCOMPLETE	P-AGEND-MAIL_ELEC_R	RULES_12_AND_22_READOUT	RATES			STRT
31	/D4M/TRANS/	INCOMPLETE	P-AGT_CSRFROMMAIN		CUSTOMERSERVICE			PAY-MAK
32	/D4M/TRANS/	INCOMPLETE	P-AGT_REFUSEDNEWPAY M	CALLING_FROM_SERVICE_LOCATION,CONFIRM_ADDR	PAYMENTX			PAY-MAK
33	/D4M/TRANS/	INCOMPLETE	P-AGT_INCORRECTNOCURRE	CALLING_FROM_SERVICE_LOCATION,CONFIRM_ADDR	PAYMENTX			PAY-REV
34	/D4M/TRANS/	INCOMPLETE	P-AGT_XFERFROMTELEPHON	CALLING_FROM_SERVICE_LOCATION,TELEPHONE	PAYMENTX			PAY-MAK
35	/D4M/TRANS/	INCOMPLETE	P-AGT_CSRFROMBILLING		BALANCEBILLING			BIL
36	/D4M/TRANS/	INCOMPLETE	P-AGT_CSRFROMMAIN		CUSTOMERSERVICE			PAY-MAK

FIG. 17

01-4006; Patrick Peterson et al.
APPARATUS AND METHOD FOR LOGGING EVENTS
THAT OCCUR WHEN INTERACTING WITH AN
AUTOMATED CALL CENTER SYSTEM
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FIG. 18

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FIG. 19

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FIG. 19A

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FIG. 20